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Demetrio Labate* (dlabate@math.uh.edu), Department of Mathematics, 651 Phillip G Hoffman, Houston, TX 77204-3008. *Sparse shearlet representations and applications to fluorescent image analysis of neuronal cultures.*

During the last decade, a new generation of advanced multiscale representations has emerged - most notably the shearlet representation - combining the power of multiresolution analysis with high directional sensitivity and selectivity. One of the most remarkable properties of this approach is the ability to provide a precise geometric characterization of the set of singularities of multidimensional functions and distributions, going far beyond the capabilities of conventional multiscale methods. These properties provide the theoretical underpinning for several innovative algorithms for edge detection, geometric separation and feature extraction. In this talk, we will show the application of these ideas to some challenging problems from biomedical imaging aimed at the automated extraction of morphological features from fluorescent images of neuronal cultures. (Received September 11, 2014)